STANDARD FORM NO. 64 ~~SECRET~~ ~~CONFIDENTIAL~~ 155-1134

Office Memorandum • UNITED STATES GOVERNMENT

TO : The Files - RD-91 **DATE:** 16 August 1955

FROM : [redacted] 25X1

SUBJECT: [redacted] 25X1

1. [redacted] had previously submitted a tentative proposal submitted to them by [redacted] covering antenna details. Dr. [redacted] with sample antenna and test data. The helix antennas shown were the [redacted] prototypes developed for Signal Corps ECM branch Evans Signal Lab (Stiber) for a crystal video system covering 500 - 12,000 mcs Contract No. DA-36-0390SC-63098. 25X1 25X1 25X1 25X1

2. The problems to be encountered in the frequency range 50 to 500 mcs from beam characteristics, gain and physical size/configuration were explored. The end result was a mutual recognition that no simple solution existed. Thus various approaches to the problems were considered including the utilization of absorptive back plates in lieu of conventional reflectors.

3. [redacted] has considerable antenna test facilities, and it was concluded that it would be highly desirable for this Office to loan the following antennas for [redacted] appraisal and possible refinement to this problem: 25X1 25X1

A. Resonant dipole (50 - 500 mc)
B. Modified discone antenna (500 - 1000)
C. NRL Horn (2.2 - 5 kmc)
D. AN/PRR-6 (Slot)
E. Modified Discone (2.2 - 5 kmc)

In turn the [redacted] loaned us a 2 - 4.5 kmc helix for R&D examination and measurement by R&D Laboratory. 25X1

4. Upon departure of [redacted] personnel, additional overall details were discussed with the [redacted] project personnel. 25X1 25X1

a. Space available was conveyed to [redacted] engineers through a deck profile plan (section only) and silhouette profile (section). 25X1

b. It was indicated that the antenna array would be at a minimum height of seven feet above companion ways to be extended (measurement at antenna base) a maximum of 17' above deck level. Thus adequate head room for deck personnel would be provided and when on search missions the antennas would be above the craft's radar mast thus reducing, to some degree, the screening to be encountered in the forward direction as well as interaction with other antennas installed.

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5. [redacted] had originally indicated that a Techtronic oscilloscope type 513 would be furnished for pulse analyzer use - this instrument is no longer in production. SP/EA has requested that a model 514AD be utilized. [redacted] will check as to current availability. 25X1 25X1

6. It was indicated to [redacted], as coordinated with SP/EA, that the crystal video unit would be used as a command unit position. With the video output connected to oscilloscope the headphone monitor will also be switched simultaneously; thus when the operator switches receiver X to the scope, his monitor headset will likewise be switched to receiver X. That individual recorder output will be arranged from each receiver for recording purposes and at the same time will be also routed to a combining amplifier which will have a combined audio output jack and a camera actuate jack. Thus, should signals be received on additional receiver during the period when the operator is viewing the scope presentation, a camera record is possible. The layout of the crystal video console will anticipate a requirement for having located thereon a repeater compass from the craft's compass and a clock. This will require further review. 25X1

7. Our current knowledge of detector crystals was reviewed and the limitations encountered. Thus we know that a minimum sensitivity of -45 dbm is achievable but not what maximum can be obtained through the employment of more recent crystal developments. [redacted] is to furnish some sample crystals for our examination at R&D Laboratory and by SP/EA personnel. 25X1

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